

# Technical Deep Dive: How GrandoPrint Achieves High-Precision Digital Printing

*Exploring the engineering behind advanced printheads, durable ink systems, and efficient roll-to-roll production.*

CALIFORNIA, CA, UNITED STATES, July 7, 2026 /EINPresswire.com/ -- Nanjing Grando Digital Technology Co., Ltd. (brand [GrandoPrint](#)) is a source factory and R&D-driven manufacturer specializing in digital inkjet printing equipment, headquartered in Nanjing, China, with a 20,000 m<sup>2</sup> production base. Its flagship GR350S Digital Label Printer is designed for industrial roll-to-roll label production, supporting printing speeds from 20 to 100 m/min and a printing width of 110–350 mm. The machine accepts media widths of 120–360 mm and feeds rolls up to 700 mm in unwind diameter.

The logo for GrandoPrint, with "grando" in black and "print" in green, both in a lowercase, rounded sans-serif font.

Nanjing Grando Digital Technology Co., Ltd.

The printing engine relies on Epson S3200-U1/S3200-U3 piezoelectric printheads, which use MEMS (micro-electromechanical systems) fabrication for precise droplet volume control. The printhead's nozzle density enables high-resolution output (native 600 dpi, upgradable via multi-pass) while the variable-drop technology optimizes ink placement for fine text, barcodes, and full-color graphics on coated and uncoated substrates.

To ensure consistent firing, the GR350S is equipped with a Multi-Point Temperature Control System for Digital Printers V1.0 (Software Copyright Registration No. 2025SR0611438). This system monitors and adjusts the thermal profile of the printhead carriage and ink supply, mitigating viscosity shifts that could cause nozzle failure in continuous production.

Ink Chemistry and Durability Engineering

The standard UV-curable ink set includes CMYK and white (CMYKW), with an optional varnish module for spot gloss or tactile effects. The pigment-based UV ink is formulated to resist scratching, heat, and chemical exposure after full LED-UV curing. This makes the GR350S suitable for Medical Label Digital, Logistics Label Digital, and [Food Label Digital Printer](#) applications where abrasion resistance and fade stability are critical.

For film substrates such as PE, PET, BOPP, PP, and OPP, the GR350S supports an integrated corona treatment system (optional) and a pre-coating station to improve ink adhesion on non-porous materials. This extends the machine's capability to PET Label Digital Printer and PP Label Digital Printer use cases, where traditional water-based inks fail.

The ink system is managed by the High-Precision Industrial Printing Inkjet Control System V1.0 (Registration No. 2025SR0599079), which regulates ink recirculation, degassing, and printhead purging cycles to reduce nozzle clogging during long runs.

### Intelligent Variable Data and Media Handling

The Variable Data Digital Label Printer variant of the GR350S supports direct database printing without batch PDF conversion, using a built-in label sensor for mark tracking. This enables real-time QR codes, barcodes, serial numbers, and anti-counterfeit marks – ideal for Variable Data Digital Label Printer, QR Code Label Printer, and Barcode Label Printing Machine workflows.

Media transport uses precision steel rollers with intelligent deviation correction protected by a utility model patent (Anti-offset Correction Device for UV Flatbed Printers, Patent No. ZL 2023 2 3477531.3). The roll-to-roll system also incorporates a patented paper roll shaft (Patent No. ZL 2024 2 1965691.4) to maintain tension stability at speeds up to 100 m/min.

A printer with anti-collision function (Patent No. ZL 2023 2 1184513.3) prevents printhead crashes in the event of media jams or thickness variations, reducing unplanned downtime.

### Key Specifications at a Glance

The following parameters are applicable to the base GR350S model configured as a high-speed continuous production digital label printer:

Model: GR350S

Print Head: Epson S3200-U1 / S3200-U3 (piezoelectric inkjet)

Printing Width: 110–350 mm

Acceptable Media Width: 120–360 mm

Printing Speed: 20–100 m/min

Ink: CMYKW (cyan, magenta, yellow, black, white) + optional varnish

Unwinding Diameter: Max. 700 mm

Power Supply: 380 VAC, three-phase, 50/60 Hz

Power Consumption: 10 kW

Dimensions (WxDxH): 2,850 × 1,400 × 2,040 mm

Additional optional sub-systems include a corona treatment module, pre-coating unit, and post-coating varnish unit. The machine supports roll-to-roll operation with automatic web guiding and a label sensor for mark tracking.

#### Certification and Intellectual Property

The GR350S and its underlying technologies are backed by an ISO 9001:2015 Quality Management System Certification (certificate number 19926Q00205R001, issued by China Standard Huaxia), covering the R&D, production, and sales of digital inkjet printing equipment for the global market. The company also holds multiple Chinese utility model patents and software copyrights, including:

- Utility Model Patent – Anti-offset correction device (ZL 2023 2 3477531.3)
- Utility Model Patent – Printer with anti-collision function (ZL 2023 2 1184513.3)
- Utility Model Patent – Paper roll shaft for industrial printer (ZL 2024 2 1965691.4)
- Utility Model Patent – Positioning device for UV printer (ZL 2023 2 0352561.2)
- Utility Model Patent – Direct inkjet printer (ZL 2023 2 1391352.5)
- Software Copyright – Flatbed Laser Inkjet Printing Precision Control System V1.0 (2025SR0627967)
- Software Copyright – Multi-Point Temperature Control System for Digital Printers V1.0 (2025SR0611438)
- Software Copyright – High-Precision Industrial Printing Inkjet Control System V1.0 (2025SR0599079)

These IP registrations demonstrate the company's engineering depth in printhead safety, media alignment, temperature control, and software-driven inkjet regulation.

#### Production Capacity and Global Reach

Nanjing Grando Digital Technology Co., Ltd. operates dual manufacturing bases in Nanjing and Shanghai, with a total factory area exceeding 20,000 m<sup>2</sup> and a team of over 500 employees. The

company's monthly production capacity for label printers is approximately 100 units, with a typical lead time of about 60 days after order confirmation. Quality control includes real-time defect detection via inline CIS sensors and 100% functional testing before delivery.

More than 70% of the company's output is exported to markets including the United States, Brazil, Mexico, Australia, Germany, Italy, and across the Middle East and Africa. The GR350S has been deployed in label printing factories for applications ranging from food and beverage labels to cosmetics, pharmaceuticals, and industrial variable-data labels.

A customer case study from an OEM buyer in Brazil and Italy reported stable operation over one year with a 30% reduction in production setup time and support for multi-SKU orders.

## Outlook

As the label printing industry shifts toward shorter runs, variable data, and film substrates, the GR350S addresses these demands with a combination of high-precision MEMS printheads, durable UV pigment ink, and a patented electromechanical control architecture. Nanjing Grando Digital Technology Co., Ltd. continues to invest in R&D focused on printing consistency, material compatibility, and long-term operational reliability.

GR350S printers undergo assembly and testing at Nanjing Grando's workshop before delivery.

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## Grandoprint

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